We have developed this five-year Strategic Plan during a critical juncture in the profession of civil and environmental engineering.

Many of the challenges facing our world today require innovations that civil and environmental engineers are poised to pursue. Improvements in water quality and availability, the creation of infrastructure for renewable energy, and mitigating the impacts of urbanization on pollution and transportation systems are but a few examples of issues that will require our expertise.

Solving these global issues will require a transformation in the way we educate the next generation of civil and environmental engineers and the way we conduct research. In addition to being grounded in fundamental engineering skills, civil and environmental engineers will need to grasp the social context of technological developments – human population growth, changing demographics, increased urbanization, increased resource consumption, climate change, aging infrastructure, and the issues of infrastructure in developing countries. Addressing these challenges will require clear vision, leadership, and innovation.

What brings together all of these challenges – and many that we will encounter in the future – is that they are cross-cutting. They require that civil and environmental engineers emerge from the silos of sub-disciplines and become drivers of multidisciplinary research areas that integrate the physical and life sciences with the social sciences. As leaders in this process, our faculty and students must be prepared to clearly understand and articulate the social implications of their technological innovations and research.

This Strategic Plan was developed to usher in that process for the School of Civil & Environmental Engineering (CEE). This plan aligns with the Institute and College of Engineering Strategic Plans, but has a focus that defines the unique spirit of CEE: People are our priority. The world is our laboratory. Building upon this foundation, we are well-prepared to take on the challenges facing the world in the 21st Century.

Sincerely,

Reginald DesRoches
Karen and John Huff Chair and Professor
School of Civil & Environmental Engineering
Georgia Institute of Technology

From The Chair
Core Values for the School of Civil and Environmental Engineering

The following qualities are the core values that guide and are reflected in CEE’s vision, mission, and strategic plan.

- Academic Rigor
- Diversity
- Excellence
- Collegiality
- Leadership
- Entrepreneurial Spirit
- Public Service
Planning Process

In the late summer of 2012, the CEE School Chair identified key stakeholders from among the students, staff, faculty and alumni to constitute a Strategic Planning Committee. That committee convened a half-day retreat in October to discuss the previous CEE strategic plan, to review the most current College and Institute strategic plans, and to create a process and timeline for a new CEE strategic plan. Six subcommittees, each representing diverse professional perspectives, were established to investigate and develop identified goals and objectives. Each subcommittee scheduled individual meetings to accomplish their work over the coming weeks and months.

As overarching principles, the Strategic Planning Committee agreed that each of the identified goals should reflect the diversity of CEE stakeholder perspectives and that the School’s progress in achieving those goals should be reviewed regularly. The group also agreed that the new strategic plan needed to emphasize the importance of cross-disciplinary research and teaching and that CEE should step-up its focus on addressing the grand challenges facing the modern world.

In early 2013, the entire committee met again for a half-day retreat to review the goals, objectives, strategies, and measures that had been identified and developed by each subcommittee. Revisions were made to those drafts during that session and a first draft of the current plan was distributed to all for more intensive review.

The Chair oversaw the editing of this and subsequent drafts, which were sent for review by the full CEE faculty and by members of the CEE External Advisory Board (EAB). The chief outcome of these reviews was the decision to limit the number of strategies and measures associated with each goal to five. This was considered by all to be a realistic aspiration for the School’s five-year strategic plan.

The original subcommittees were tasked with reconvening to refine their work so that it would meet the five-strategy/measure structure. Those drafts were submitted in the late spring and reformatted by the Chair, who submitted the final draft to the Strategic Plan Committee for final review and approval.

Vision

People are our priority. The world is our laboratory.

CEE students, faculty, and alumni will be global leaders in planning, designing, constructing, managing, and renewing built and natural environments, contributing to a sustainable world, shaping public policy, and enhancing health, safety, and the quality of life.

Mission

Through cross-disciplinary research, service-based learning, and innovative course content and delivery, CEE students, faculty, and alumni will be leaders in systems-level thinking and technological innovation that define and solve complex problems at the interface of built, natural, and social systems. They will also engage in service to the State of Georgia, the nation, and the world.

The following six objectives map out CEE’s action plan for achieving its mission and vision.
Objective 1: Education

Enhance our curriculum and learning pedagogy to prepare our students to become global leaders in addressing the societal grand challenges and identifying opportunities that are at the interface of built, natural, and social systems.

Goals

Many of the global challenges facing society today will require innovations from civil and environmental engineers. Issues such as the lack of clean air and water, infrastructure for renewable energy, urbanization and its impact on pollution and transportation systems, and managing extreme events are but a few examples of challenges that will require civil and environmental engineering expertise and leadership.

Solving these issues will require a transformation in the way we educate our students. In addition to being grounded in the fundamental technical skills of engineering, civil and environmental engineers will need systems-level thinking, an understanding of the social and political implications of their technological developments, and an ability to solve complex and interconnected problems in the face of uncertainty.

Strategies

1. Promote pedagogy that cultivates critical thinking and problem-based learning.
2. Increase international experience and engagement in education.
3. Foster the development of excellent communication, leadership, and entrepreneurial skills.
4. Incorporate innovative technologies in the classroom to enhance learning.
5. Ensure that we are providing students with a curriculum that is flexible, yet contains content that enhances fundamental skills that align with the needs of the profession.

Measures

1. The number of new and existing courses that include problem-based learning and/or formal leadership development content, as well as the number of leadership development, problem-based learning opportunities, and vertically integrated projects available through internships, independent studies, and co-ops.
2. The number of new and existing opportunities for global engagement incorporated into the CEE curriculum and the number of students participating in course-based (and non-course-based) opportunities for overseas study/international service-learning.
3. The number of new and existing opportunities that explicitly develop communication, leadership, and entrepreneurship skills via the curriculum or through co-ops, internships, or independent studies.
4. The number of courses, internships, co-ops, and independent studies that incorporate new and innovative teaching technologies.
5. The number of curriculum changes made based on an annual review of core and upper-level courses by the undergraduate curriculum committee to ensure their alignment with industry needs, practices, and standards.
Objective 2: Research

Leverage CEE’s size, breadth, and depth to address the greatest challenges facing the state, nation, and world through the development and support of research opportunities across all disciplines.

Goals

CEE will be recognized as the leader in conducting inter- and trans-disciplinary research to improve human and ecosystem conditions from the local to the global scale. Through improved designs, invention, and thought leadership, CEE research and scholarship will be among the most cited, and CEE counsel, the most sought-after worldwide. CEE research foci on the nexus between built, natural, and, social environments as well as the School’s anticipation of global change will lead to CEE faculty attaining leadership roles at the Institute, state, national, and global levels.

Strategies

1. Recruit and support faculty who have a strong disciplinary foundation and a demonstrated commitment to cross-disciplinary collaboration that is aimed at addressing important regional and global challenges.

2. Recruit and foster a student body with a strong disciplinary foundation and demonstrated interest in cross-disciplinary collaboration.

3. Promote a School structure that values, promotes, and rewards inter-and intra-disciplinary and international activities.

4. Enhance an environment that cultivates, sustains, and rewards scholarship and impact.

Measures

1. The number of faculty involved in research projects, papers, workshops, centers, and scholarly activities that are interdisciplinary within CEE and other Institute centers and schools.

2. The number and quality of student engagements (research, internships, co-ops, speakers series, etc.) that are interdisciplinary and/or collaborative.

3. The number of seminars, workshops, and scholarly activities that are interdisciplinary and/or international.

4. The number of traditional academic benchmarks achieved by faculty and students (e.g., number of publications, paper awards, invited keynotes, graduate student fellowships and awards) as well as the impact of their scholarship on the practice of engineering at both the regional and global levels.

“...CEE research and scholarship will be among the most cited, and CEE counsel, the most sought-after worldwide.”
OBJECTIVE 3: GLOBAL PUBLIC SERVICE AND OUTREACH

To empower, inspire, and equip CEE students and faculty to be engaged global citizens through public service and outreach that address challenges on the state, national, and/or global levels.

Goals

Civil and environmental engineers are distinct from engineers in other fields in that they closely interface with the public. CEE recognizes the importance of public service for our students and addresses that by equipping them to contribute to society through public service and civic outreach. CEE will be recognized for developing engaged and empowered technology innovators who tackle global challenges and contribute to the betterment of society through domestic and international public service in a constantly evolving world.

Strategies

1. Engage and support faculty champions, international alumni ambassadors, and existing student organizations (e.g. Engineers Without Borders, Engineers for a Sustainable World, etc.) in public service and outreach.
2. Involve internal and external organizations, individuals, and resources in support of civic engagement activity and service learning courses.
3. Increase utilization and leveragability of the Joe S. Mundy Global Learning Endowment and other campus resources to create innovative research and educational opportunities that focus on global challenges.
4. Further develop relationships with domestic/international corporations, foundations, alumni, and academic institutions to support faculty and student global outreach.
5. Promote and develop media and web tools to support faculty and student engagement in domestic and global public service.

Measures

1. The number of newly established faculty ambassadors; the number of faculty and alumni involved as mentors/champions for student organizations and global outreach programs; the number of alumni mentoring student civic projects; the number of web and social media resources that promote the activity of student civic organizations.
2. The number of partnership-building events established; the number of partnerships with global institutions of higher learning established; the creation of new service learning courses and the number of existing courses whose focus on global public service increases.
3. The number of existing and newly created involvement opportunities for undergraduate and graduate students; the total number of Joe S. Mundy scholarships awarded to students annually; number of global challenge/civic learning courses supported through the Joe S. Mundy Endowment; and the percent increase in student participation in student civic organizations.
4. The amount of additional funding/support committed from external organizations; the degree to which engagement with existing external corporate and foundation relations increases; the number of new external relationships and global outreach initiatives established.
5. The number and type of media releases (e.g. spotlight articles, blogs, web pages, and other messaging) related to public service activities generated by CEE; the number of inquiries CEE receives from key constituencies; the number of external sources that publish or otherwise promote CEE’s public service initiatives.
Objective 4: Creativity and Innovation

To embrace creativity and innovation as guiding values in our academic community, in educating the next generation, and in establishing trend-setting research.

Goals

To create and foster a culture: that encourages intellectual curiosity and creativity; where students, staff, and faculty share a passion for learning and devote themselves to solving critical problems; where individuals find the context to reinvent their professional focus within a framework of ethical values and a commitment to society’s well-being; and where such a spirit permeates educational programs, daily activities, and research products.

Strategies

1. Establish a 3-credit idea-implementation driven course.
2. Augment courses in the curriculum to include innovation-stimulation tasks.
3. Promote an idea-rich environment for the seamless discussion of new concepts and solutions and the promotion of values of excellence in scientific creation through high-impact activity.
4. Organize an annual, mixed-discipline, CEE contest to inspire innovation.
5. Launch a program “The Faculty Reinvention Program” to create conditions that facilitate their renewed emergence into new lines of research. The program will be supported by the recruitment of new and mid-career faculty.

Measures

1. The number of students who develop new engineering solutions, apply for provisional patents, and present their work to potential private investors.
2. The number of guest lecturers from other fields (including history of technology, law, and sciences) who are involved in CEE courses. The number of undergraduate students who participate in research projects under the supervision of graduate students. The Center for the Enhancement of Teaching and Learning will be involved to report metrics on vertical and cross-disciplinary integration.
3. The number of start-ups, patent applications, and significant connections with non-governmental organizations (NGOs) established; the number of public spaces in which white boards and graphical displays depict CEE engineering challenges, inspiring concepts and solutions, and the history of ideas and scientists.
4. The number of proceedings and wiki-pages created to disseminate the results of analogical studies from other fields, bio-inspired solutions, and creative explorations and designs; the number of participants in the CEE innovation contest.
5. The number and diversity of scholarly products emerging from CEE faculty.
Objective 5: Leadership

Foster an environment in which CEE’s status as a local, national and global thought leader in the field is promoted in multiple venues, internally and externally.

Goals

Curriculum-based leadership training will distinguish CEE from other programs in the state and around the nation, capitalizing on the successful examples of CEE alumni. Leadership will also define CEE by promoting expertise in critical areas of civil and environmental engineering. CEE’s expert opinion will be sought by policy-makers, engineers, and researchers.

Strategies

1. Establish formal courses (or modules within courses) on leadership; integrate more project/group work into CEE courses; inform students about educational opportunities in leadership; develop advising materials that encourage students to embrace leadership as a part of their education.

2. Promote leadership as an explicit goal within CEE public communications, public policy, and advocacy functions by aggressively seeking opportunities to write and publish op-eds on important subjects, testify at governmental hearings on critical public policy issues, and give expert commentary on issues central to CEE.

3. Leverage alumni expertise/experience with a guest speakers series and/or smaller round-table group discussions between alumni and students.

4. Continually seek to inform and improve CEE’s leadership development by surveying CEE graduates and employers about the defining qualities of leadership in CEE.

5. Mentor faculty through opportunities and programs to achieve their leadership potential.

Measures

1. The number of leadership courses/modules, group projects, seminars, and courses offered to, and required of, CEE students.

2. The number of requests for expert commentary, advice, and information that CEE receives from reporters, editors (op-ed), elected leaders (testifying on issues), academic, trade and professional organizations each year.

3. The number of speakers/roundtable discussions launched; the formal efforts to market and publicize these events; the number of people who attend.

4. The number of survey tool(s) received to record feedback.

5. Number of faculty taking advantage of leadership programs.

“CEE’s expert opinion will be sought by policy-makers, engineers, and researchers.”
GOAL: ORGANIZATIONAL EFFECTIVENESS

Relentlessly pursue administrative effectiveness, innovation, and excellence to enable CEE faculty, staff, and students to fulfill the School’s educational, research, service and tactical missions.

Goals

Improving the effectiveness of administrative functions within CEE is focused on three goals: (1) streamlining student-related administrative processes to assist students with making progress towards their degree objectives; (2) creating a work environment that facilitates the professional and personal growth of CEE staff; and (3) decreasing the amount of student and faculty time devoted to administrative activities.

Strategies

1. Streamline common administrative processes used by the faculty and staff by offering them in readily available formats.

2. Establish a comprehensive staffing plan to ensure that faculty and staff needs are addressed.

3. Establish a budget planning process that provides flexibility to annually invest in select new initiatives that are aligned with the strategic plan.

4. Prepare and implement professional development plans for every staff member that include appropriate cross-training and career enhancement opportunities.

5. Enhance communication between students and CEE administration via an action-oriented student handbook, aggressive use of web technologies, and regular employment of social media platforms.

Measures

1. The number of CEE faculty/staff who have had their administrative needs met, as determined by the results of an annual survey assessing user experience with CEE administrative support and procedures.

2. The faculty-staff ratio in CEE (to be compared with ratios in other campus units).

3. Having 5 percent of annual operative budget available for strategic new investments.

4. The number of satisfactory employee training/workshop experiences, as determined by a post-class/workshop survey or interview in which employees rate the skill-building, morale-boosting, and/or job-enhancing aspects of the workshop.

5. The number of students who respond positively to the stated outreach efforts as measured by (1) participation in online chat and/or (2) post-class-registration survey of other methods employed (e.g. revised handbook, social media, and the web).
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